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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,493	10/28/2003	Chan-Soo Hwang	678-1211 (P10802)	8168

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EXAMINER	
TRAN, KHAI	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
11/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,493	HWANG ET AL.	
	Examiner	Art Unit	
	KHAI TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed 8/02/2007 has been entered. Claims 1-14 are pending in this Office action.

Response to Arguments

2. Applicant's arguments filed 8/02/2007 have been fully considered but they are not persuasive.

Applicant's argument regarding claims 1-14, Shibutani fails to disclose a puncturing technique for achieving both multiplexing gain and diversity gain without overlapping of the transmission signal, i.e. the puncturing technique for eliminating an interference component caused by transmitting the overlapped signal, and the feature of summing up the modulation symbol stream and puncturing the same recited in the present invention. Contrary to applicant's assertion, claims 1, 8 do not recite a puncturing technique for achieving both multiplexing gain and diversity gain without overlapping of the transmission signal, i.e. the puncturing technique for eliminating an interference component caused by transmitting the overlapped signal, and the feature of summing up the modulation symbol stream.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject

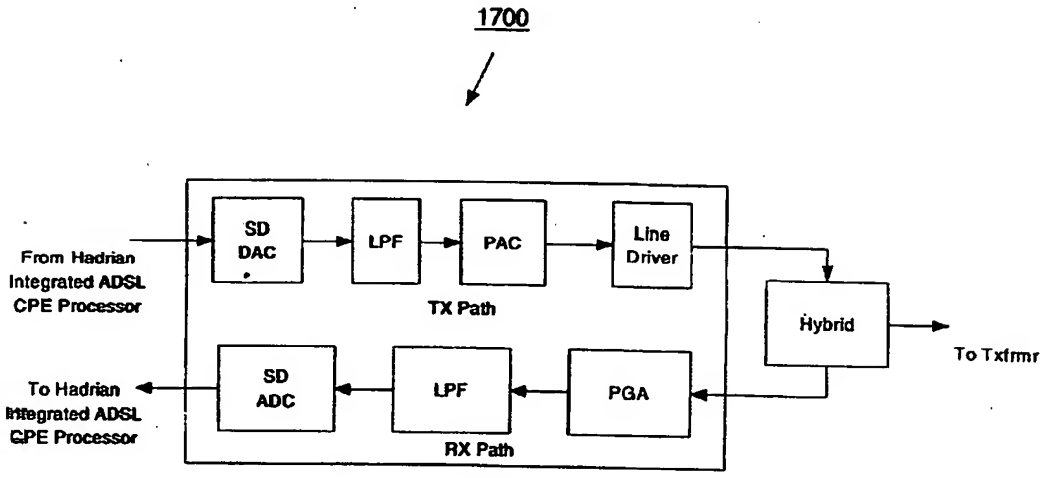
1700
From Hadrian Integrated ADSL CPE Processor
SD DAC
LPF
PAC
Line Driver
TX Path
Hybrid
To Txfrmr
To Hadrian Integrated ADSL CPE Processor
SD ADC
LPF
PGA
RX Path

FIG. 17

matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 - 2 and 8 - 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibutani (US 2003/0002518) in view of Kim et al., "A new soft handover scheme using punctured turbo codes in the wideband CDMA system" IEEE Vehicular Technology Conference, 2001 Spring, pp 1420- 1424.

Regarding claims 1 and 8, Shibutani discloses apparatus for transmitting data in a mobile communication system including at least three transmission antennas of first to third transmission antennas, and using an overlapped antenna scheme for grouping the first and second transmission antennas into a first transmission antenna group and grouping the second and third transmission antennas into a second transmission antenna group, the apparatus comprising: first modulator for receiving L information bit streams to be transmitted through the first transmission antenna group, modulating each of the L information bit streams in a predetermined modulation scheme, and outputting first modulated symbol streams (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 - 46); first puncturer for receiving the first modulated symbol streams, and puncturing at least one modulated symbol in a predetermined position among the received first modulated symbol streams (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 - 46); and a multiplexer for transmitting a modulated symbol

stream output from the first puncturer through the first transmission antenna (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 - 46). Shibutani is not explicit about four associated similar transmitting paths, and also is not explicit about transmitting a symbol stream output from a second similar path and a symbol stream output from a third path through the second transmission antenna after summing up the symbol streams, and transmitting a symbol stream output from the third path through the third transmission antenna, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to multiple transmitting paths, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

In the same field of endeavor, however, Kim discloses four associated similar transmitting paths and transmitting a symbol stream output from a second similar path and a symbol stream output from a third path through the second transmission antenna after summing up the symbol streams, and transmitting a symbol stream output from the third path through the third transmission antenna (section 3. figure 3, where in the figure it is shown to have transmitting path to include two rate matching elements (punctures) associated with multiplexing elements, the figure only shows 2 base stations, and it would have been obvious to one skilled in the art at the time of invention was made to have four puncturing paths and four associated multiplexing operations, please also note the output of each puncturer is directed to every multiplexing element).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use four associated similar transmitting paths and transmitting a

symbol stream output from a second similar path and a symbol stream output from a third path through the second transmission antenna after summing up the symbol streams, and transmitting a symbol stream output from the third path through the third transmission antenna as taught by Kim in the system of Shibutani to improve performance of soft handover (abstract, section 1 paragraph 4).

Regarding claims 2 and 9, Shibutani further discloses wherein for the modulated symbol streams output from the first to fourth modulators, the first to fourth puncturers each set the number of punctured modulated symbols to the same number (paragraphs 40, 43).

Regarding claims 3 and 10, Shibutani further discloses wherein the first to fourth puncturers each set modulated symbol streams output from the first to fourth modulators so that a position where the modulated symbol is punctured is periodically repeated (paragraphs 43, 51).

5. Claims 4 - 7 and 11 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibutani (US 2003/0002518) in view of Kim et al., "A new soft handover scheme using punctured turbo codes in the wideband CDMA system" IEEE Vehicular Technology Conference, 2001 Spring, pp 1420 - 1424 in further view of Walton et al. (US 2004/0156328)

Regarding claims 4 - 7 and 11 - 14, Shibutani discloses a position where the sequence is inserted is determined according to a puncturing matrix (figures 1 and 4, figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 - 46). Shibutani is not

explicit about wherein if the number of modulated symbols constituting the modulated symbol stream is 4 and/or 8, a puncturing matrix defined as a specific matrix.

In the same field of endeavor, however, Walton discloses an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream (figure 8 elements 810x- 810y, 120x - 120y, figure 9 elements 920, 924, 926, Pilot Symbols, paragraphs 106- 116).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream as taught by Walton in the system of Shibutani to facilitate random access ability in the wireless system (paragraph 4).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use any puncturing pattern. Applicant has not disclosed that the specific puncturing pattern provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any puncturing pattern.

Therefore, it would have been obvious to use any puncturing pattern to one of ordinary skill in this art to modify any puncturing pattern to the claimed puncturing pattern to provide proper, rate matching, rate to fit the physical channel.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KHAI TRAN
Primary Examiner
Art Unit 2611

KT
November 5, 2007